

## REMARKS

This Amendment is submitted in response to the Office Action mailed February 25, 2003. Claims 1-20 are canceled and new claims 55-75 are added as shown above. Claims 55-75 remain pending in the application. Applicants respectfully request reconsideration of the application and allowance of all pending claims in view of the above amendments and the following remarks.

### Drawing Objections

The Examiner objected to Figure 1 of the drawings. According to the Examiner, Figure 1 should be labeled with a legend such as --Prior Art -- because only that which is old is illustrated. The Examiner required a proposed drawing correction or a corrected drawing in reply to the Office Action to avoid abandonment of the application. Applicants have submitted herewith a revised version of Figure 1 with a legend that includes the words "Prior Art." Applicants submit that this overcomes the Examiner's objection and respectfully request withdrawal of the objection.

### Claim Objections

The Examiner objected to claims 2-4, 6, 10-13 and 15-20 for being dependent on a rejected base claim, but indicated that these claims would be allowable if re-written in independent form including all the limitations of the base claim and any intervening claims. Applicants respectfully submit that the Examiner's objections are rendered moot by the cancellation of these claims.

### Rejections Under 35 U.S.C. § 102

The Examiner rejected claims 1, 5, 7-9 and 14 as anticipated under 35 U.S.C. § 102(b) by Hsu, Wan-Thai, *Mechanically Temperature-Compensated Flexural Mode Micro-Mechanical Resonator*, IEEE, Dec 12, 2000 (hereinafter "Hsu"). As further explained below, Applicants respectfully traverse the Examiner's rejections on two grounds.

First, to be a proper prior art reference under 35 U.S.C. § 102(b), the date of the reference must pre-date the filing date of the application by a year or more. The filing date of the present application is June 11, 2001, but Hsu was published on December 12, 2000, less than a year

before the filing date of the present application. Hsu therefore cannot be used as a prior art reference to reject any claims in the present application under 35 U.S.C. § 102(b).

Second, Even if Hsu could be used as prior art to reject the claims in the present application under some other part of § 102, it would not anticipate the claims. A claim is anticipated only if each and every element, as set forth in the claim, is found in a single prior-art reference. MPEP § 2131; *Verdegaal Bros. v. Union Oil of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). The Examiner's rejection of claims 1, 5, 7-9 and 14 is rendered moot by the cancellation of these claims, but as further explained below Hsu cannot anticipate the new claims added herein because it does not disclose every element and limitation recited therein.

Hsu discloses a mechanically temperature-compensated resonator. As illustrated in figures 1 and 2 of Hsu, the resonator includes a flexural mode resonator beam anchored to a substrate at one end and supported at its other end by a folding truss structure attached to two outer beams. The outer beams are designed to expand faster than the beam with increasing temperature, thus causing a linear translation of the folding truss that results in a net tension in the resonator beam. Metal electrodes positioned on either side of the resonator beam allow lateral excitation of the beam by applying a DC biasing voltage  $V_p$  to the resonator beam while applying an AC excitation voltage  $v_i$  to the metal electrodes. This combination of voltages across the gap between the metal electrodes and the resonator beam generates a force at the frequency of  $v_i$  that drives the beam into lateral vibration when the frequency of  $v_i$  matches the resonance frequency  $f_o$  of the resonator beam.

Claim 55 recites a method combination including manufacturing a resonator beam having a first end and a second end, "manufacturing a lever arm, the lever arm being connected to a pivot and to the first end of the resonator beam," and "using an actuator to apply an actuation force to the lever arm to apply strain onto the resonator beam." Hsu cannot disclose a method including such limitations. Contrary to the Examiner's assertion, Hsu does not disclose an apparatus including a lever arm. Instead, Hsu discloses an apparatus in which linear expansion of two beams causes a linear translation of a truss attached to a resonator beam, thus creating a tensile stress in the resonator beam attached to the truss. Hsu therefore does not teach, disclose or suggest a method combination including "manufacturing a lever arm, the lever arm being connected to a pivot and to the first end of the resonator beam," and "using an actuator to apply

an actuation force to the lever arm to apply strain onto the resonator beam.” Applicants submit that Hsu therefore cannot anticipate claim 55, and respectfully request allowance of the claim.

Regarding claims 56-70, if an independent claim is allowable, then any claim depending therefrom is also non-obvious. MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claims 55 is in condition for allowance. Applicant therefore respectfully submits that claims 56-70 are allowable by virtue of their dependence on allowable claim 55, as well as by virtue of the features recited therein. Applicants therefore respectfully request allowance of these claims.

New claim 71 recites a combination method including providing a resonator beam having a first end and a second end and “applying an actuation force to at least one of the first end and the second end, the actuation force creating a temperature-dependent compressive strain in the resonator beam.” The Examiner concedes that Hsu does not disclose applying a compressive strain to a resonator beam, and Hsu therefore cannot disclose a method including “applying an actuation force to at least one of the first end and the second end, the actuation force creating a temperature-dependent compressive strain in the resonator beam.” Applicants submit that Hsu therefore cannot anticipate claim 71, and respectfully request allowance of the claim.

Regarding claims 72-75, if an independent claim is allowable, then any claim depending therefrom is also non-obvious. MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claims 71 is in condition for allowance. Applicant therefore respectfully submits that claims 72-75 are allowable by virtue of their dependence on allowable claim 71, as well as by virtue of the features recited therein. Applicants therefore respectfully request allowance of these claims.

### Conclusion

Overall, none of the references singly or in any motivated combination disclose, teach, or suggest what is recited in the independent claims. Thus, given the above amendments and accompanying remarks, independent claims 55-75 are now in condition for allowance. The dependent claims that depend directly or indirectly on these independent claims are likewise allowable based on at least the same reasons and based on the recitations contained in each dependent claim.

If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to allowance of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.

Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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Todd M. Becker  
Attorney for Applicant(s)  
Registration No. 43,487

Blakely, Sokoloff, Taylor & Zafman LLP  
12400 Wilshire Boulevard, Seventh Floor  
Los Angeles CA 90025-1030  
Phone: 206-292-8600  
Facsimile: 206-292-8606

Enclosures: Postcard  
Revised Figure 1